at least one other point of location of another antenna element of the same stationary base unit and the step of determining from said phase differences the coordinates of location of said wireless reference transceiver are performed in a main unit.

REMARKS

Favorable reconsideration of this application as presented herein is respectfully requested. Claims 17-42 are canceled and new Claims 43-79 are added in order to clarify the nature of the invention.

In the Office Action of December 4, 2000 (Paper No. 7), Claims 17-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Maloney (USP 4,728,959) (hereinafter "Maloney I") in view of Maloney et. al. (USP 6,047,192) (hereinafter "Maloney II"), while Claims 25-42 were rejected under 35 U.S.C. 103(a) as being made obvious by the combined teachings of Maloney I and Hilsenrath et. al. (USP 6,026,304) (hereinafter "Hilsenrath").

Applicant respectfully submits that new Claims 43-79 are neither anticipated nor made obvious by the teachings of Maloney I, Maloney II and Hilsenrath, or

combination thereof.

Maloney I teaches obtaining phase angle measurements indicative of the angle of direction of a mobile transmitter station from each of a plurality of support land stations. (See Maloney I, col. 3, lines 9-14 and col. 5, lines 4-10). Then, the phase angle measurements obtained for a mobile transmitter are sent from multiple support land stations to a central control land station. (See Maloney I, col. 5, lines 4-7). At the central land station, the phase angle measurements from multiple support land stations for a mobile transmitter are translated using Hilbert transformation and processed to produce probability density functions, which are combined after a CHI-square analysis to produce an area of uncertainty representing the position of the mobile transmitter station. (See Maloney I, col. 3, lines 45-59 and col. 3, lines 9-18.) It does not teach how to express the phase difference at two or more points of location of antenna elements of a stationary base unit relative to another point of location of another antenna element of the same stationary base unit, and how to determine from those

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expressed phase differences the coordinates of location of the monitored mobile unit. Likewise, Maloney II teaches obtaining phase angle measurements at two antenna sensor sites 201 and 202. (See Maloney II, col. 5, lines 6-14.) Maloney II further teaches how to estimate the location of a transmitter from the intersection of two or more angle measurements received from two or more antenna sensor sites. (See Maloney II, col. 5, lines 45-55 and col. 5, lines 21-33.)

Neither Maloney I nor Maloney II teach or describe how to express the phase difference at two or more points of location of antenna elements of a stationary base unit relative to another point of location of another antenna element of the same stationary base unit, and how to determine only from those expressed phase differences the coordinates of location of the monitored mobile unit. In fact, according to the teachings of Maloney I and Maloney II, neither a control station nor a base (support) station would be capable of calculating the coordinates of a mobile unit based on the data collected by a single station. (See Maloney I, col. 4, lines 30-40; col. 5, lines

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4-11 and Maloney II, col. 1, line 60 - col. 2, line 5; col. 5, lines 21-30) Accordingly, newly added claims 43-56 are patentably distinct from the combined teachings of Maloney I and Maloney II and their allowance is hereby respectfully requested.

Additionally, both Maloney I and Maloney II teach methods and apparatus for determining the location of a mobile radio transmitter positioned in the service area of a cellular communications telephone system. (See Maloney I, col. 1, lines 5-10; col. 4, lines 29-36 and Maloney II, col. 1, lines 23-39). The tracking systems described in both of these references have a control land station that utilizes cellular environment to notify each support land (base) station to search for certain mobile stations (see Maloney I, col. 4, lines 47-54), and each "support land station [then] monitors the transmissions of the mobile transmitter station at the prescribed frequencies" and identifies each transmitting mobile unit upon the receipt of a signal (see Maloney I, col. 5, lines 4-17) (emphasis added). All newly added independent claims (claims 43, 57, and 72) are amended to emphasize that one feature of the

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current invention is that each base unit periodically polls the mobile units in its area to request a signal transmission from each mobile unit in order to perform a continuous tracking of that mobile unit. The applicant respectfully disagrees with Examiner's statement in the first paragraph on page 5 of the Office Action dated Dec. 4, 2000 that Maloney I teaches periodic polling of the mobile units by the stationary base units or continuous tracking of that unit. As pointed out above, neither Maloney I nor Maloney II references teach or suggest use of periodic polling by the base units to allow continuous tracking of the mobile units. Accordingly, an allowance of all pending claims (claims 43-79) that include this additional limitation is requested.

Another distinctive feature of the claimed invention, as recited in the new claims 54-56, 69-71, and 72-79, is the use of portable transceivers that are positioned in the known locations to calibrate signals received from the mobile units. Maloney I teaches calibration technique based on the known positions of neighboring land (base) stations. (See Maloney I, col. 7,

lines 63 - col. 8, line 2). By utilizing portable transceivers, whose location may be easily readjusted or changed to a more strategically important location, the current invention provides a more accurate and flexible calibration technique that is superior to the calibration method taught by Maloney I. Also, in contrast to the current invention, Maloney's calibration method uses a known position of a neighboring base station and does not work when only one station is utilized or when the transmission signals between the available base stations are blocked.

It is further respectfully argued that combining teachings of Maloney I together with Hilsenrath does not teach the improved calibration method of the current invention. The tracking technique taught by Hilsenrath describes receiving a signal from a mobile phone (unit), determining from it the so-called signal signature, comparing this received signal signature to the stored database of already calibrated signal signatures, paired with their associated locations, and determining the probable location of the mobile phone as that which is

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associated with a stored calibrated signal signature that is the closest in value to the signal signature received from the mobile unit. (See Hilsenrath, col. 9, lines 53 - col. 10, line 4 and col. 4, lines 56-65).

The database of calibrated signal signatures in Hilsenrath is created at some prior time by a GPS receiver, computer and a phone, which are placed in a vehicle which moves to various locations throughout a base station service area. At each location, base station determines the signal signature for that location, associates the signature with the GPS location information transmitted from the phone and stores it in a database of calibrated signatures. (See Hilsenrath, col. 9, lines 17-34.) The combined teachings of Hilsenrath and Maloney I (or Maloney II) do not describe or suggest using real-time data from a portable transceiver (rather than a calibrated value previously processed and stored in the database), and performing the calibration step in real-time for the signal received from a mobile unit by adjusting it in accordance with the difference between the actual location and a calculated location of the portable transceiver, also

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measured and calculated in real-time.

Thus, applicant respectfully submits that new claims 51-53, 62-64, and 65-72 recite subject matter which patentably distinguishes over the prior art of record under either 35 U.S.C. § 102(b) or § 103.

Reconsideration and an early favorable action on the merits are respectfully requested.

Respectfully submitted,

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